

REMARKS

The Specification has been amended to correct typographical errors and to accommodate amendments to the drawing.

Amendment to the Drawing:

The drawing has been amended as suggested by the Official Action, except concerning element number 55 and for reasons given *infra*.

– **Concerning element # 25:**

the paragraph beginning on page 12, line 18 in the specification has been amended

-- **Concerning element # 48:**

this element number has been deleted from FIG. 6. A replacement sheet and an annotated sheet showing the change are attached.

-- **Concerning element # 164:**

this element number has been deleted from FIG. 14. A replacement sheet and an annotated sheet showing the change are attached.

-- **Concerning element # 156 in FIGs 15a and 15b:**

this element number has been changed to 196 and the paragraph beginning on page 24, line 17, has been amended. A replacement sheet and an annotated sheet showing the changes are attached.

-- **Concerning element # 141 in 5b:**

this element number has been changed to 41 and the paragraph beginning on page 15, line 18, has been amended. A replacement sheet and an annotated sheet showing the change are attached.

– **Concerning element # 55:**

Applicant respectfully submits that his element number refers to the same quantity throughout, i.e. the length dimension of a single diffracting crystal. The drawings show how the meaning of this quantity is preserved step-by-step:

- in Fig. 8a it represents the thickness of a slice 53 as it is cut from a crystal cylinder 51.
- in Fig. 8b it represents the corresponding dimension of a crystal element 42 as the slice 53 is cut into such elements.
- in Fig. 9b it represents the same dimension as long slabs 61 are bent. Please note that the specification indicates that in Fig. 9b the crystals are different from those in 9a and 8b. The face 59 is a long rectangle in 9b rather than a square as in 8b and 9a.

Amendment to the Claims:

Claims 1-20 are pending in this application.

Claims 1, 4, 6, 8, 10, 13, 15, and 20 are objected to. These claims have been amended. Claims 1-5 and 9-17 are rejected under 35 U.S.C. 102 (b) as being anticipated by Smither (U.S. 5,869,841).

Claims 6 and 19 are rejected under 35 U.S.C. 103 (a) as being anticipated by Smither (U.S. 5,869,841).

Claims 7 and 20 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Smither (U.S. 5,869,841) in the light of Yamashita et al. (WO 03/018131).

Claims 8 and 218 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Smither (U.S. 5,869,841) in the light of Hura (U.S. 4,246,488).

Independent claims 1 and 10 and dependent claims 4, 6, 7, 8, 13, 15, 18 and 20 have been amended to overcome these rejections and objections.

The Present Invention.

The present invention belongs to the field of high spatial-resolution imaging of an x-ray or gamma source. It produces what is known as a real image, i.e. rays emanating at the source are focused to form the image, with, as much as possible, a one-to-one correspondence between source points and image points. One would like to have a point

image of a point source, but, even in theory, this is impossible: one has to overcome aberrations and other obstacles.

The present invention teaches two methods for obtaining high resolution imaging, i.e. the production of a point-like image of point source, that are not taught in the prior art of record:

a) placing collimators in front of the source and in front of the detectors, said collimators having apertures equal to or smaller than the desired resolution;

b) using detectors of a size equal to or smaller than the desired resolution.

These methods can be used separately or in combination.

The Prior Art Does Not Teach The Methods

This Invention Introduces to Improve Image Resolution.

Independent Claims 1 and 10 have been amended to recite apertures with a width approximately equal to the required resolution. Thus, as now claimed, the present invention, is patentably distinct from the Smither 5,869,841 patent and the Sec. 102 rejection based thereon should be withdrawn.

None of the other cited patents seek to provide a real point-like image of a point source:

The Hura patent does not teach how to use collimators to generate a point image of a point x-ray source. Instead Hura teaches how to collimate a rectangular cross-section x-ray radiation beam (column 4, lines 5-24). The beam traverses a patient and the patient's organ and skeleton cast a shadow on a film tray (col. 10, l. 68). As such, Hura neither anticipates nor suggests providing high spatial resolution as is now recited in independent claims 1 and 10.

One cannot combine the Hura and the Smither 5,869,841 patents to yield the present invention because Smither 5,869,841 produces a real image and Hura teaches nothing that improves the resolution of that image. In fact, the word 'resolution' does not appear in the Hura specification, nor does any equivalent thereof.

The Yamashita et al. application teaches the use of small detectors, but it does not teach how to use such detectors to yield a point-like image of a point source. Yamashita et al. does not teach the imaging of a source. Rather it detects the angular distribution of

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radiation scattered by an x-ray target over a wide solid angle. (See the discussion in connection with FIGS 2 and 3). Yamashita's detectors serve the same function as the silver grains in the Hura patent; they yield coarser spatial information, but it is real time.

Nothing in Yamashita's claims addresses the question of image resolution or mentions the use of detectors. Yamashita neither anticipates nor suggests providing high spatial resolution as recited in independent claims 1 and 10. One cannot combine the Yamashita and the Smither 5,869,841 patents to yield the present invention because Smither 5,869,841 produces a real image and Yanashita teaches nothing that improves the resolution of that image.

An earnest attempt has been made hereby to respond to the May 3, 2005, Official Action. The Applicant submits that the application is in condition for allowance. If the Examiner feels that a telephone conversation is warranted to expedite prosecution in this matter, he is respectfully urged to contact the undersigned. Claims 1 through 20 are pending in the application. Allowance is respectfully solicited.

Respectfully submitted,

CHERSKOV & FLAYNIK

By 

Charles Nissim-Sabat (42,037)

Fig. 5a

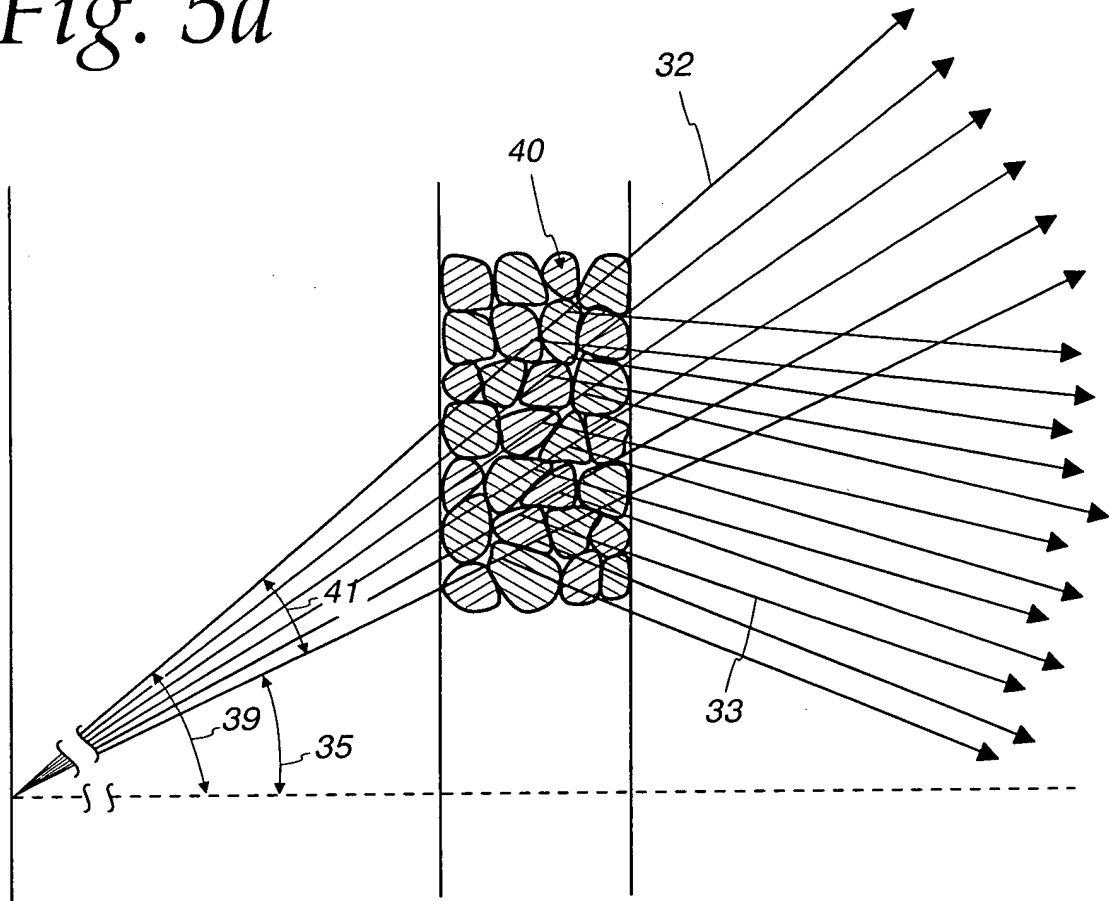
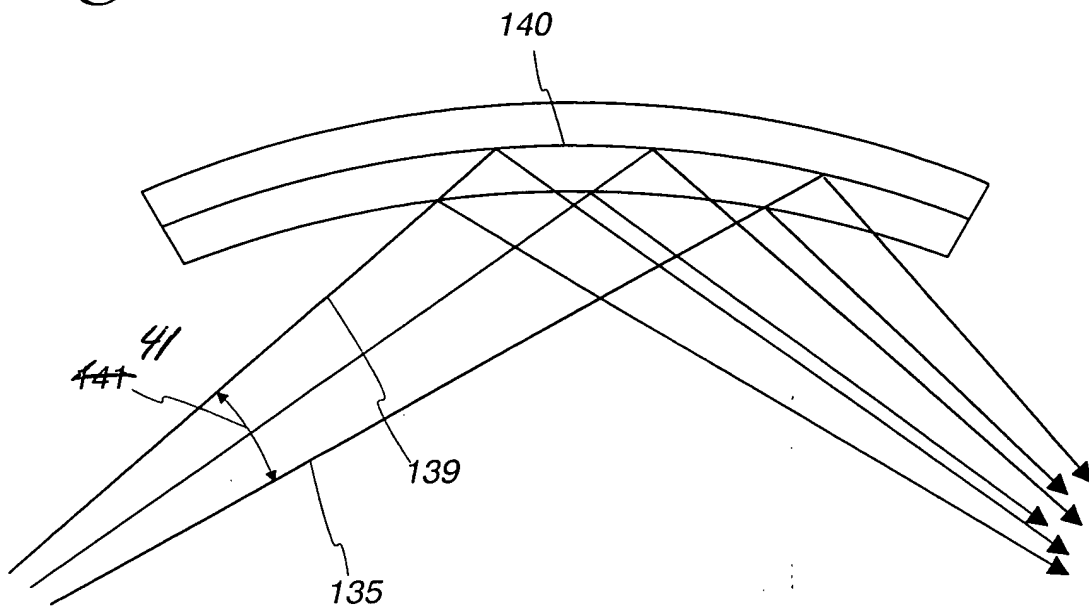


Fig. 5b



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Fig. 6

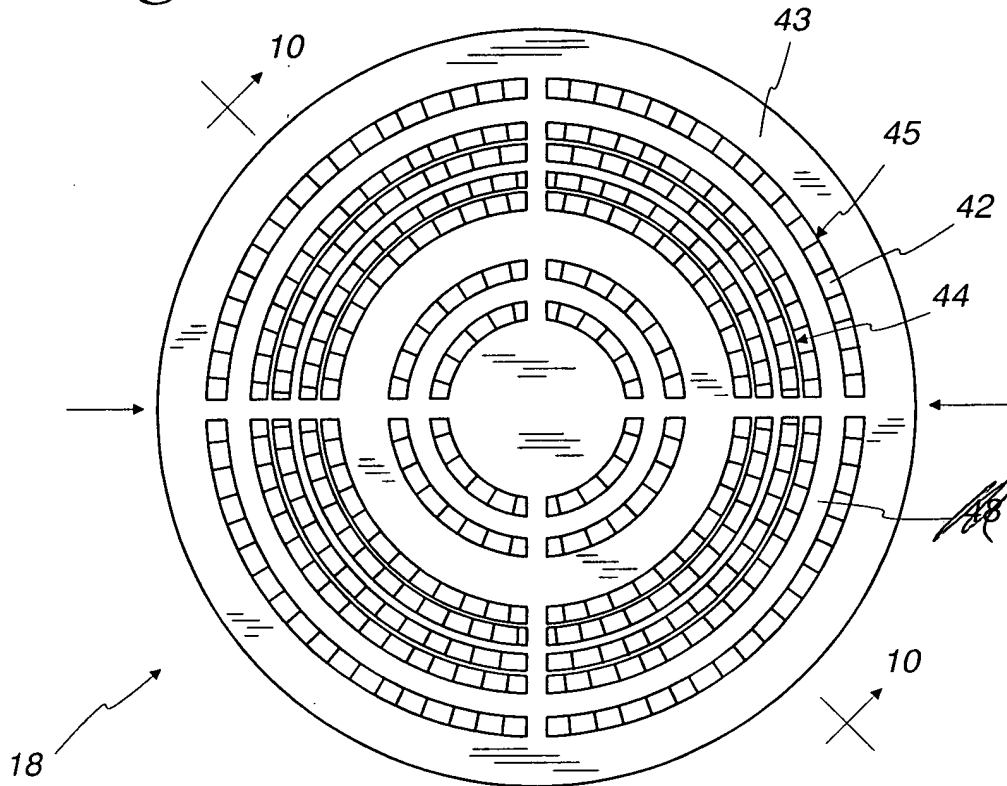


Fig. 7

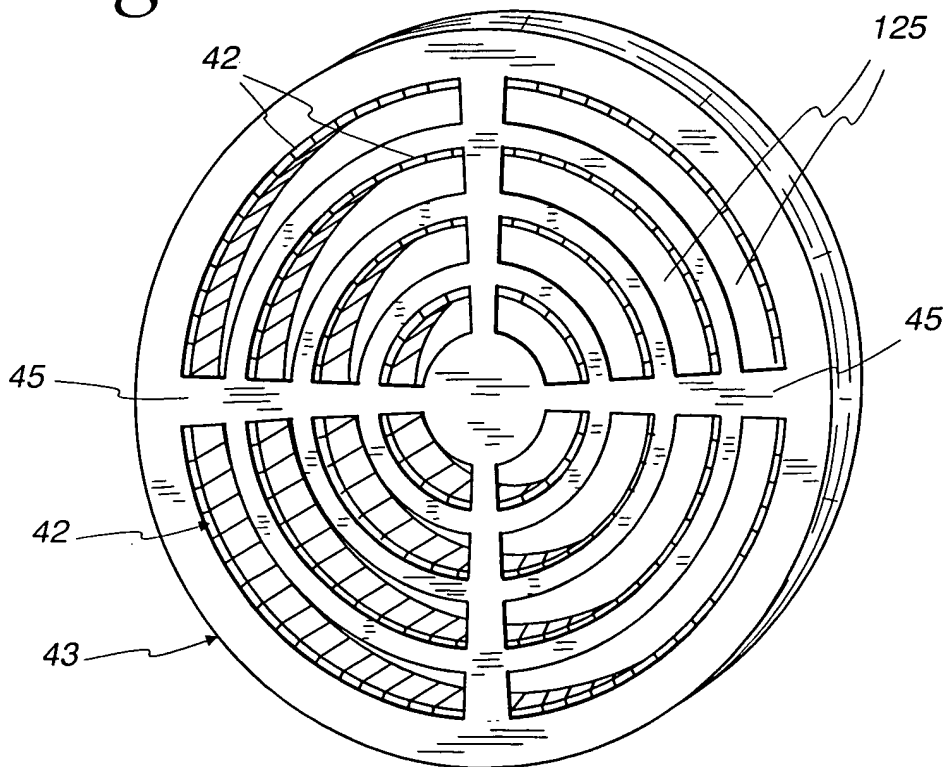


Fig. 13

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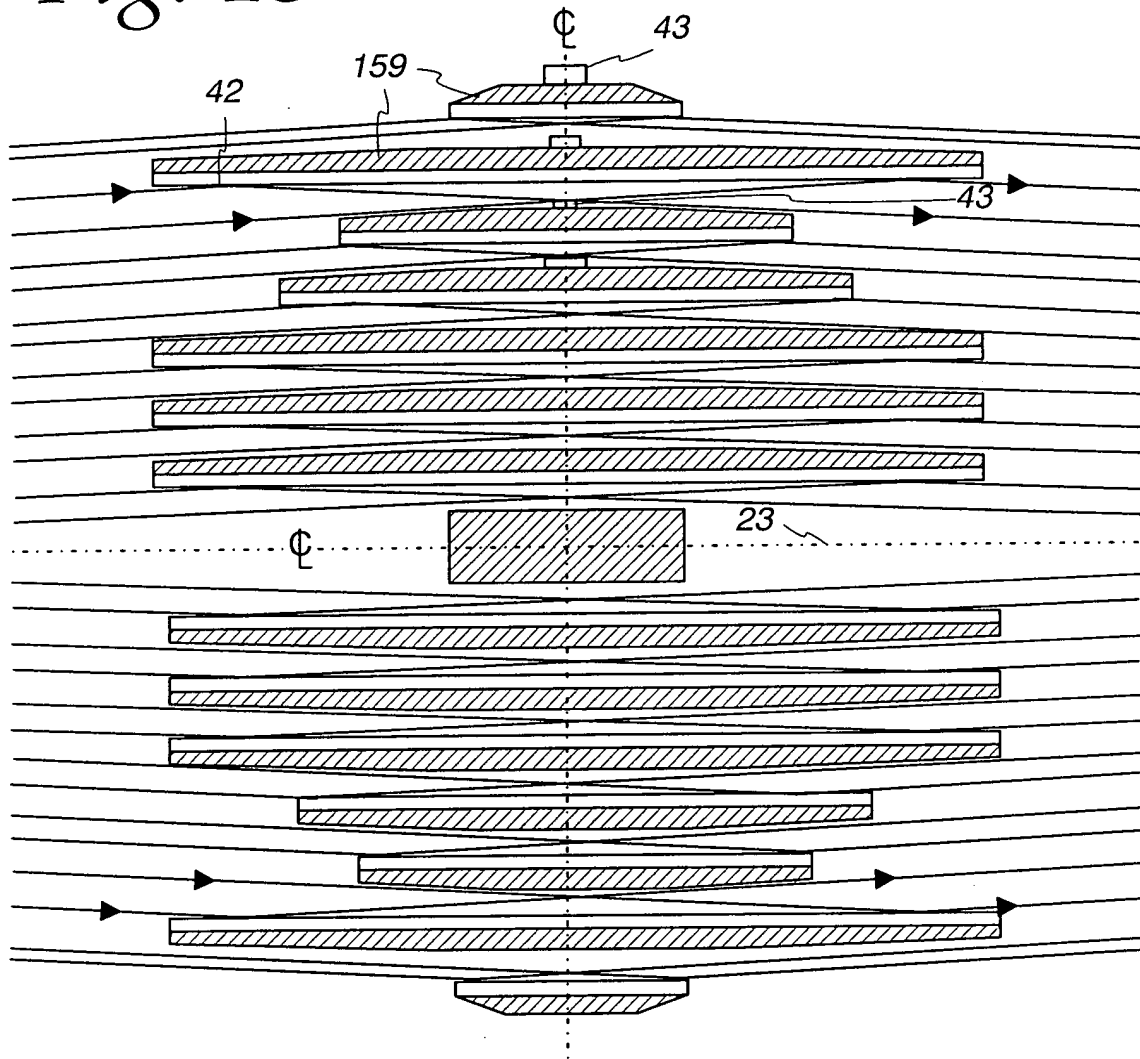
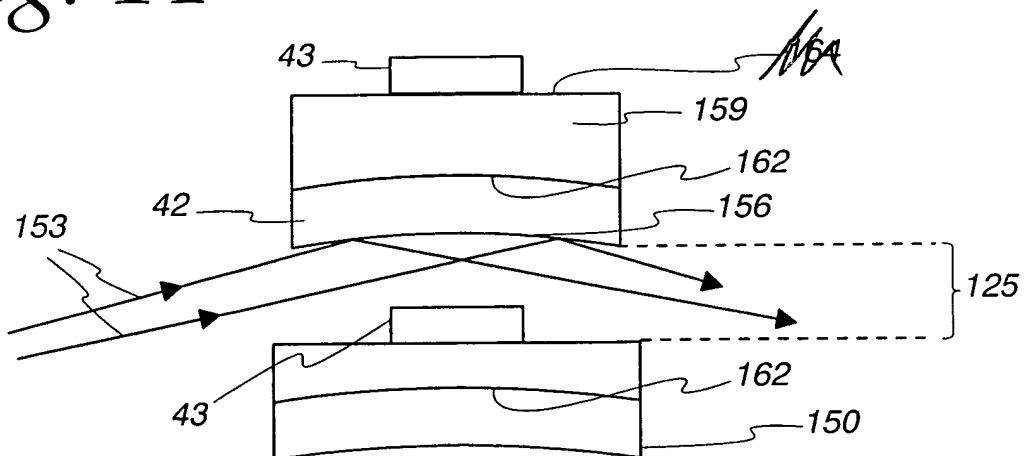


Fig. 14



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Fig. 15a

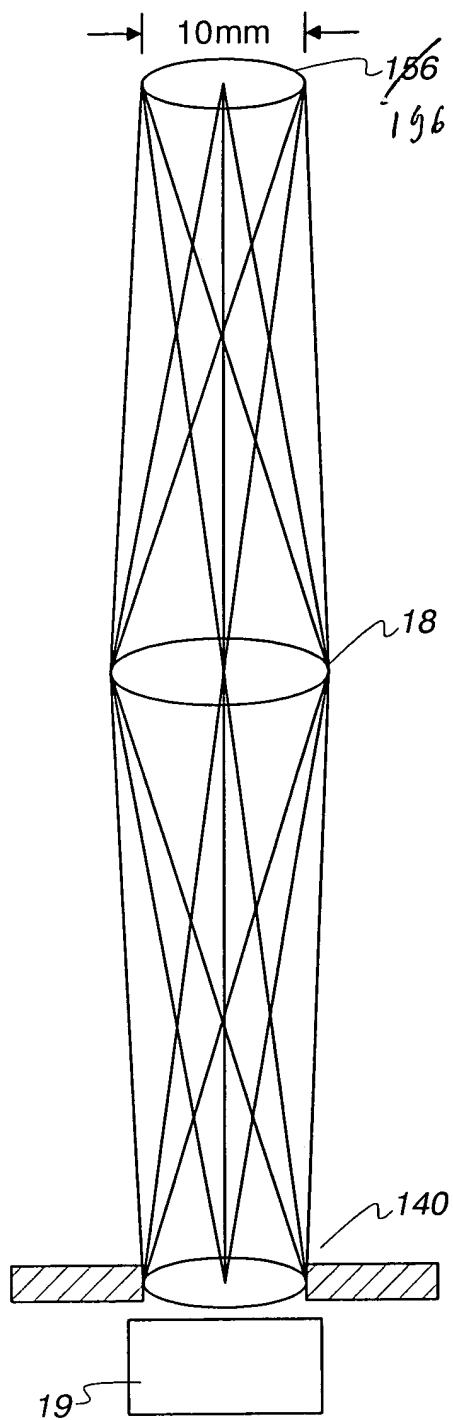


Fig. 15b

